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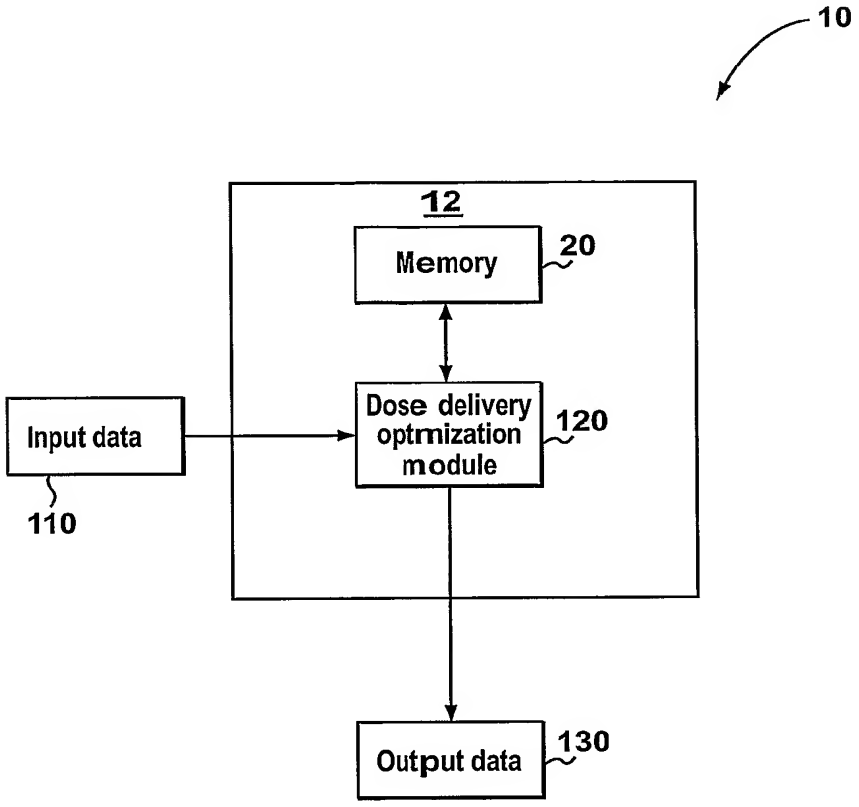
(54) Title: METHOD AND SYSTEM FOR OPTIMIZING DOSE DELIVERY OF RADIATION



(57) Abstract: The invention relates to improved methods and systems for computationally efficient optimization of radiation dose delivery. The optimization involves determining an improved form of objective function to be used for mapping radiotherapy beams to a patient body volume having at least one target volume and at least one non-target volume. The objective function has a first term related to the at least one target volume and a second term related to the at least one non-target volume. The optimization further involves determining a minimum of the objective function, whereby beams mapped so as to pass through the at least one non-target volume are limited such that the second term is zero only if the weights of beamlets passing through the at least one non-target volume are zero. This limit helps to avoid the occurrence of negative beam weights, thereby facilitating computationally efficient determination of the minimum of the objective function using matrix inversion. Following the optimization, radiotherapy is delivered based on the determined minimum of the objective function.

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